

502

AMERICAN  
**RAILROAD JOURNAL,**  
AND  
**MECHANICS' MAGAZINE.**

---

No. 8, Vol. VIII.  
New Series.

APRIL 15, 1842.

[Whole No. 404.  
Vol. XIV.

---

Our readers will no doubt peruse, with great satisfaction, the communications which Messrs. Williams and Stuart have kindly furnished us on the subject of *piled roads*. The economy and celerity of this mode of construction give it an important claim to the attention of engineers.

The communication of Mr. Williams gives an admirable instance of the divisions of labor well worth imitating. From both these gentlemen we shall be most happy to hear again, in accordance with their promise.

[For the American Railroad Journal and Mechanics' Magazine.]

OHIO RAILROAD OFFICE,

CLEVELAND, March 21, 1842.

GENTLEMEN: In compliance with a request made by you sometime since, asking for further information relative to the construction of a railroad upon piles, I send you an abstract of the progress of the work on the Ohio railroad. I do so the more readily, as I conceive this mode of building railroads far preferable to any other, particularly in this climate, and where timber is so abundant as it generally is in the Western States.

Our plan is to embrace in the first contract the clearing of the track, delivering the piles ready for driving;—the ties, wood and logs for rails;—piles, ties and wood, distributed on the line;—the logs (180) hauled into one yard for each section or mile, of a suitable size to make four rails, eight inches square and fifteen feet long. The pile machine is then put upon the track, and the driving

of the piles done by contract, at eleven cents each,—the contractor finds himself and keeps the machine in repair. The saw mill is next put upon the track, and the sawing of the rails is done by contract for \$225 per mile. The contractor finds himself and takes the logs from the yard as left by the first contractor and keeps his mill in repair. The rails are deposited on a car standing on the track, forward of the mill. They are then taken forward by the contractor for laying the superstructure, and put into the work as fast as they come from the mill. Care is taken to arrange the logs in stations, so that the rails at one, shall reach to the first station forward. The mill stands on wheels, and is hauled forward on the track the same as a car. A boarding house constructed also upon wheels is attached to each machine and mill, in which the hands board and lodge, giving them the pleasant consolation of being "always at home." In this arrangement the first contractor clears the track and furnishes the material. The second drives and saws off the piles. The third saws the rails. The fourth furnishes the pins and wedges. And the fifth lays the superstructure and completes the work ready for the iron. White oak timber is used for the piles, ties and rails. Piles are from eleven to twenty-two inches in diameter, and driven to a firm foundation, five feet from centre to centre longitudinally, and seven feet transversely. The following table shows the average cost of one mile of this road exclusive of grading, bridging, engineering and the natural wear of machinery :

	Average contract prices.
Clearing the track, -	\$100 00
2,112 piles, 30 cents each, -	633 60
1,056 ties, 18 cents each, -	190 08
180 logs for rails, \$1 25 each, -	125 00
75 cords of wood for machinery, 50 cents a cord, -	37 50
4,224 pins and wedges, (red cedar) 1½ cents each, -	52 80
Driving piles, 11 cents each, -	232 32
Sawing rails, -	225 00
Laying superstructure, -	375 90
	<hr/>
	\$1,971 30
	<hr/>

The largest number of piles driven by one machine in one day was 500 or 75½ rods, and the greatest number driven in nine successive working days, by one machine, was 2,112 or one mile. Each machine is propelled by two engines of five horse power, and

manned by eight men. Each mill is propelled by one engine of six horse power, and manned by three men. Time will not permit me to give you a further description of our work at this time, but should this be acceptable to those interested and to your readers generally, I will improve the first opportunity to give you a further detail of our operations in constructing a piled road.

Truly yours,

C. WILLIAMS,  
Chief Engineer Ohio Railroad.

[For the American Railroad Journal and Mechanics' Magazine.]

ENGINEERS' OFFICE, SUSQUEHANNA DIVISION,

NEW YORK AND ERIE RAILROAD,

ELMIRA, March, 15, 1842.

GENTLEMEN: Having promised in my communication of the 25th of January last, to give you a further statement of our *experience* in the construction of PILED ROAD on this division, I take the liberty of sending you the following extracts from the testimony given by me upon this subject, when before the select committee of the assembly of 1841, appointed with instructions to investigate the affairs of the New York and Erie railroad company, and the conduct and management of the officers and agents thereof. (See report of committee, assembly documents, 1842, No. 50, page 203.)

By the CHAIRMAN,—

Question 23. Have you made or examined any tests, with the view of ascertaining the *comparative merits* of a railroad constructed upon *piles*, and one upon a bed of earth or stone, and if so, state the conclusions to which you have arrived, with the facts connected therewith?

Answer. I have made numerous examinations relative to the construction of railroads upon *piles*, within the last three years, and have become thoroughly convinced that the *piling* system is an important improvement in railroad construction, and especially in *northern climates*, where *severe frosts* and *deep snows*, are common in the winter months.

A road resting upon white oak piles, (from eleven to eighteen inches in diameter,) driven to a depth of *five* feet or over, and in all cases reaching a solid foundation, and sawed off two or three feet above the surface of the earth, is not liable to derangement by *frost* nor obstruction by *snow*; and combines in a greater degree than any other mode that has been adopted in this country, *cheapness* and *permanency*; the two most essential requisites in railroad con-

struction. Piles that have stood in the most exposed situation on the Utica and Syracuse railroad for the *four* past winters, and those driven on this division during the summer and fall of 1840, in *every variety of soil*, abundantly prove the fact, that *frost* cannot displace them, if they are driven to a depth of *five feet or over*. A piled road is also free from the obstructions and dangers incident to a graded road, in consequence of the washing of the banks by floods and rains, and by *settling* when on soft bottom, thereby requiring constant annual expense to adjust the superstructure and replace the earth material. It will, I think, also lessen if not entirely prevent the frequent accidents that occur on graded railroads, arising from cattle and other animals obstructing the track when trains are passing at high rates of speed.

The permanent and uniform foundation, that a *piled road* affords during all seasons of the year, cannot, I think, be too highly appreciated; and for road calculated to transport heavy freight, its decided superiority over the usual modes of constructing railroads in this State cannot be questioned.

From the experience afforded me during the construction of the Syracuse and Utica railroad, as well as the past two years on this division, I have no hesitation in strongly recommending the adoption of a *piled road* wherever the nature of the soil, surface of the country, and a supply of suitable timber will admit of such a structure. On this division there is being made over *one hundred miles* of *piled road*, along the valley of the Susquehanna, Chemung, Tioga and Canistee rivers, of which distance, the piles are now driven for *seventy miles*, and the eight steam pile drivers are now in operation, driving the residue at the rate of *ten miles per month*.

The actual cost of this piling, (when sawed off in readiness to receive the superstructure,) has averaged less than *two thousand dollars per mile*, including the white oak pile timber, from eight to thirty feet in length, and from eleven to twenty inches in diameter, costing on an average about three and one-half cents per lineal foot, delivered on the line of road. These piles are driven from five to twenty feet, and where required by the looseness or softness of the earth, double piles are driven to a depth of fifty feet or more, and sawed off from two to four feet above the embankment, or the natural surface of the ground.

To have substituted a graded road bed in place of piled road on this division, would have cost not less than *four thousand dollars per mile*, for the whole distance, without including the cost of grading necessary for the piled road, where the surface of the earth

requires to be excavated or embanked for the purpose of bringing the earth grade from one to four feet from the grade line of the road. No difficulty has been experienced in driving white oak, chesnut, or Norway pine piles below the reach of frost, in sand, gravel, clay or alluvial soil; and whenever excavations or embankments occur exceeding *four* feet in depth or height, the cost of removing the additional quantity of earth necessary for a graded road bed, with its *side ditches*, exceeds the cost of *piling*, including the *piling timber*.

The excavations for pile road on this division are made twelve feet wide on the bottom, with side slopes of one foot vertical to one and a half feet horizontal. The piles are sawed off one foot above the bottom of the cuts, and a ditch of three feet wide and one foot deep, is made between the rows of piles to carry off the water. The earth from the excavations is carried into embankments, when the grade exceeds three feet in height from the natural surface of the ground. The embankments are made to within three feet of the tops of the piles, twelve feet wide on the top, with side slopes of one and one-half feet, to one foot.

There is no doubt but that the piles used on this division, will endure at least from ten to fifteen years, without incurring any additional expense to preserve them, other than the peeling off the bark above the ground, which is done immediately after they are driven.

The process of saturating the piles with sulphate of iron (copperas) or salt, can be applied at an inconsiderable expense. Salt was used on the Syracuse and Utica railroad, it is believed, with good effect. There can be no doubt of its utility, as an antiseptic. This company are about closing a contract with Manrow and Higginbotham, to saturate the *piles* with a solution of copperas or the sulphate of iron; and suitable machines, to be propelled by *steam*, are now being constructed at Owego.

From the experience that I have had in the construction of *piled road*, and from the examinations that I have made relative to the cost of grading and keeping in repair the ordinary graded roads of this country, I think I am within bounds, when I say, that the *interest* on the amount saved by building a *pile road*, instead of a *graded road*, for the one hundred miles on this division, together with the annual expense in keeping a graded road bed in good adjustment and repair, will *renew the piles*, should it be necessary, every *five* or *six* years, so long as suitable timber could be obtained at *twice its present cost* on this division.

If the *white oak* piles should *not* remain sound more than eight or ten years the expense of filling around them with earth, at the expiration of that time, with the use of *cars* to move the earth, would cost at least *fifty per cent. less*, than it would now cost to make the embankments to the grade line, with barrows or wagons, as most of the earth would require to be drawn from the hills for great distances, in consequence of the alluvial soil found along the bottom land of the river, not being suitable for making a road bed for graded roads. Wherever the valleys to be filled are deep, and the excavations from which the earth is to be taken to embank over them, are at any considerable distance off, the hauling of the earth is postponed until the track is laid on the piles, and then done with *cars* and locomotive power, at a great saving of expense.

Another consideration in favor of *piled road* is, that when the piles are partially decayed, the earth embankments can be *cheaply* brought up to grade, as has been shown, and the strength of the *pile* will, for *many* years thereafter, keep the track from settling; thus you will perceive, that the superstructure having been kept from the ground, and of course in a great measure preserved, the earth being brought to grade, as before remarked, and well rammed under the superstructure, we have a new and permanent road, much more permanent than roads where the rail is laid on a new, and of course, not thoroughly settled embankment.

The construction of pile road on this division, has, I think, enabled the company to make contracts with the land holder along the route (where such road is made) for right of way, fencing, and farm crossings, for at least *seventy-five per cent. less*, than they could have done, had a graded road been substituted in its place. This arises from the fact that while the piles remain in good preservation there will be no necessity of fencing along the railroad, excepting the nailing of a few boards upon the piles, while the farmer can cultivate all the land sold to the company, and which is from four and a half to six rods in width, (until it shall be required for a double track or graded road) except the width of *eight* feet occupied by the *piles*. The piled road also permits cattle and other animals to pass *under* the track, and thus saves the great expense usually required on graded roads, to make embankments over the road for farm crossings, on expensive bridges or culverts, to allow teams and cattle to pass under the road embankments. A large amount is also saved in the single item of *cattle guards*, necessary over graded roads, to prevent cattle from passing from private or public roads, or to the track of the railroad, and thereby obstruct the passage of

trains; and which occasion a great share of the destruction of life and property on graded roads. A large amount is also saved by dispensing with the numerous small box and arch culverts, to pass the small brooks and creeks.

As I have before remarked, the great advantage of the *piling system* consist in its *cheapness* and *permanency*; and in regard to *durability*, it will be seen, that, if the perishable material of which it is constructed can be *renewed* at an expense of less than the *interest* upon the difference in the *first cost*, and necessary annual expense, (when compared with a *graded* road) it must result in an **ULTIMATE SAVING OF EXPENSE.**

[Here Mr. Stuart inserted extracts from a correspondence between himself and Frederick Whittlessy, Esq., secretary of the Towanda railroad company, in November, 1840, for the purpose of showing the committee his views respecting some of the *disadvantages* resulting from the modes so much in use in this country, of laying the superstructure on *graded* roads without a sufficiently firm and solid foundation to support it, and keeping it uniform or even, during all seasons of the year, but the committee deem it too long to be printed, in addition to his foregoing statement.]

In my next communication, I will send you further extracts from the same document, showing the manner of inspecting the piled road and pile timber on this division of the New York and Erie railroad.

I remain, gentlemen, yours,  
Very respectfully,  
C. B. STUART,  
Chief Engineer Susquehanna Division.

[For the American Railroad Journal and Mechanics' Magazine.]

#### FAILURE OF RAILWAYS.

MESSRS. EDITORS: The unquestionable importance of obtaining clear notions of the "Causes of the Failure of many Railroads in the United States" or of drawing public attention to this subject, to the end that some remedial action may be had, will doubtless be a sufficient apology for occupying a portion of your useful pages with a very few more remarks.

Railroads are usually commercial enterprises, designed to remunerate their proprietors by suitable dividends upon the money expended in their construction; they are made for the purpose of conveying a traffic, either actually existing, or "which may reasonably be anticipated," and those who invest funds in such undertak-

ings, expect returns upon their investments within a reasonable time.

That this expectation may be verified, is it not evident, that "the means must be proportional to the end," or the road to the anticipated business?

Capitalists engage in such affairs for their own immediate emolument, and consequently ought not to construct great roads where little ones would, for a series of years, be competent to do the business; for this would be erecting works for the sole benefit of a distant posterity, a design (however patriotic) but seldom entertained in these utilitarian days.

It seems unnecessary to multiply words in elucidation of a point so clear, that the writer has witnessed with unfeigned surprise the singular positions taken in this connection by some of your correspondents. Let us illustrate one of them by an example:

In the tenth annual report of the Winchester and Potomac railroad company, the president states that they have in use upon that road a locomotive of such vast power, that she "has never been loaded. Her energies have never yet been tested. Every blast from her boiler and *scream* from her whistle, is a challenge to the farmer, to the merchant and the miller, *to load her.*"

This is a case in point;—it is a road made in the first instance upon a scale too great for the trade "which could reasonably be anticipated;"—which has not yet divided the first cent to its proprietors, and which has lately been equipped with machinery of a power far beyond the wants of the business, (if one may judge from the above statement of its president,) and yet X. will doubtless say that all this is judicious!

Now if a common carrier could haul all the freight between two villages with *a two horse team*, would it be good policy for him to put upon the same road *a huge wagon with a dozen horses*, and hire a man with stentorian lungs to ride upon its top and *scream for trade?*

Of course the answer to this question must be in the negative; and yet the employment of the extra horses, and of the stentor to invite business, would be but a necessary consequence of the doctrines advanced by your ingenious correspondent X.

Let us now consider a case, which is of frequent occurrence on public works, and which closely resembles several that have come under the immediate notice of the writer.

A contractor undertaking to build a work containing 6,000 perches of masonry,—the quarry is in an adjacent hill three miles

distant,—the ground undulates, but generally declines towards the work,—and a common road is already formed from the quarry down, upon which to haul the stone in common wagons, would cost *one dollar and a half per perch.*

Now by constructing a wooden railroad, without iron,—generally following the natural surface of the ground,—and placing upon it wide trucks with cast iron wheels, at a gross expense of \$2,000, he finds that the cost of transportation can be reduced to *a half dollar per perch*, and he then makes the following calculation:

Cost of transportation by the existing common road, 6,000	
perches, at \$1 50 per perch,	\$9,000
Cost of transportation by the wooden railway if made, 6,000	
perches, at 50 cents per perch,	<u>3,000</u>
Difference,	6,000
Deduct cost of wooden railroad, trucks, etc., complete,	<u>2,000</u>
Profit, by constructing wooden railroad,	<u>\$4,000</u>

This result of course justifies the construction of a rude and slight railroad, *duly proportioned to the expected trade*, and such an one is accordingly made in such cases (as it ought to be) conformably to the views advanced by Mr. Ellet.

But let us now see the result, which would ensue from the doctrine that every railroad should be built on the same grand plan, and equipped with monstrous locomotives, without regard to the trade "which may reasonably be anticipated."

Cost of a single track, edge railroad, including the graduation, three miles, at, say, \$20,000 per mile,	\$60,000
Locomotive engine and cars, (steam power being cheaper than horses,) say,	<u>10,000</u>
Deduct cost of transportation by the existing common road,	<u>9,000</u>
Loss, by building an iron edge railroad,	<u>61,000</u>

So that by adopting and acting upon the doctrines advocated by X., the luckless contractor, instead of a profit of \$4,000, which

would have accrued by duly proportioning "the means to the end," would be actually *minus* some sixty thousand dollars, for the advantage of obtaining "*speed, power and security*," which we are informed are the grand desiderata upon railroads.

The above is an extreme (though common) case,—but we ask, does it bear directly upon the question, and would not Mr. Ellet's views on the one hand, lead us to adopt the slight but cheap and *suitable* road; while those of X., upon the other, would counsel the use (in some form) of the stronger and more magnificent, but ruinously expensive and *unsuitable* one?

Z.

[For the American Railroad Journal and Mechanics' Magazine.]

PRESERVATION OF TIMBER.

MESSRS. EDITORS: In your Journal for March 15th, an article appears, which strongly recommends the use of Earle's process for preserving timber by impregnation with the sulphates of copper and iron, and though the writer does not entertain the least doubt that the article in question was written with the best motives, it nevertheless appears to be *premature*, in the existing state of this question.

None know better than yourselves, Messrs. Editors, how injuriously the interests of some railway companies have been affected by the too hasty adoption of well meant, but injudicious recommendations, founded upon *too limited experiments*.

You need not to be informed that no adequate judgment can be framed of the merits of any process for preserving timber, by an experience (however favorable) of but *two years* in duration; for few, indeed, are the sticks of timber, admitted into public works, which in that brief space would give indications of decay.

No one could rejoice more than the writer, if it were indeed a settled point that Dr. Earle's process is *effectual*, but in the face of strong evidence to the contrary, it seems impossible to come to that conclusion.

In proof of this, the writer would ask your attention:

I. To the wooden pavement, *prepared and laid* (we believe) under Dr. Earle's personal supervision, in the city of Philadelphia, *Sixth street, south from Chesnut*. This pavement was adduced sometime ago in your Journal as evidence of the success of the process, but this also was *entirely premature*, for the fact can no longer be concealed, *that it is, at this moment, rotting in holes, just as the un-*

*prepared wooden pavement did*, in Chesnut street, opposite the United States bank, which the authorities of the city have lately ordered to be taken up and replaced by *cubical stone blocks*,—not, you will observe, by Earl-ized timber, as they probably would have done, had they been satisfied with the experiment in Sixth street.

II. To the record of the experiments of M. Boucherie, translated from the French, by Professor J. F. Frazer, and published in the Journal of the Franklin Institute, (at page 379, December, 1841,) which shows that when he attempted to protect from putrefaction the very alterable “pulp of the beet,” which seems to be one of the strongest conceivable tests of the preservative action, exercised by substances mixed with the pulp, he found that ninety-five grammes of this pulp,—

*In its natural state*, moulded in nine days.

*Mixed with one deci-gramme of corrosive sublimate*, complete protection ensued.

*Mixed with one gramme of pyrolignite of iron*, complete protection ensued.

*Mixed with one and a-half grammes of sulphate of iron*, corruption was retarded but one day !

*Mixed with one and a-half grammes of sulphate of copper*, corruption was retarded but two days !!

Now, Messrs. Editors, with these facts before us, can it with propriety be said that *Dr. Earle's process has succeeded*? And if not, ought it to be recommended for adoption?

Z.

---

[For the American Railroad Journal, and Mechanics' Magazine.]

ON THE SPRING TRADE OF THE CITIES OF NEW YORK AND BOSTON  
WITH THE WESTERN STATES BY WAY OF THE GREAT LAKES.

By W. R. CASEY, Civil Engineer.

The profession of the writer will readily suggest the particular view in which he proposes to consider the spring trade. He takes it for granted, that its importance is acknowledged by all, and considers it to be just as well known, that the want of an earlier communication in the spring with the western States is the only actual disadvantage under which New York labors, as a commercial city. If he is correct in this latter assumption,—that an earlier communication with the west is the grand desideratum,—the following remarks may be of interest sufficient to entitle them to a place in your Journal. For the object of this paper is to show the great

advantages which the community would derive from being permitted to use railways in the transportation of western freight; and, secondly, that the legislature can, by granting this privilege, even to a very limited extent, place the spring trade on as good a footing as it ever can occupy, by any expenditure of money in the construction of any work in the State of New York.

By means of the Western railroad, Boston will participate in the advantages arising from any improvement in the communication with the west by way of *Albany*, and if the following views have any interest for the merchant of New York, who wishes not only to retain undiminished, but to extend his present sphere of action, they can scarcely be matter of indifference to the merchant of Boston, who is looking forward to the time when he shall, himself, participate in a trade created by his own industry and enterprize, and, in the prosecution of which, every right minded man in New York, as well as elsewhere, will wish him the success he so well deserves; for the writer considers it to be as undesirable as impracticable, that any one Atlantic port should draw to itself the entire trade of the west, which is quite large enough for all the cities, from Quebec to New Orleans, whose natural or artificial advantages are such as to offer the requisite inducements. It must be borne in mind, that the western trade to be discussed in the following pages, is that by way of the great lakes *only*.

The western trade, whether by way of Buffalo or Oswego, has, as yet, always gone by the eastern end of Lake Erie, which remains closed from four to ten weeks later in the spring than the western end. The harbor of Erie, Pennsylvania, the only good harbor on the lake, and the terminus of the Pennsylvania State works, is open sooner than any harbor in New York, hence, to have an earlier communication with the west it is necessary to strike Lake Erie still further to the westward. This may be done by a continuous railway from Albany to Cleveland, a distance of five hundred and twenty miles, or by a railroad across the peninsula of Upper Canada one hundred and thirty miles long, making, with the railways from Albany to Oswego, a distance of three hundred and ten miles, by that mode of conveyance, the remaining distance between New York and Lake Huron being accomplished by steamboat. The project of a continuous railway from Albany to Cleveland, is considered by the writer as scarcely worthy of notice, for, during the season of navigation, it would be comparatively useless, and at other times, the cost of transportation must be very high for this reason, as well as on account of the two hundred additional miles

of railway. The other avenue to the west, that is, the contemplated "Great Western railway," from the western extremity of Ontario to the foot of Lake Huron, he regards the only work which can secure the best possible communication between the east and west. A paper on this subject appeared in the Railroad Journal April 15, 1840, and though the main object in that communication was to show the very decided superiority of this route for the "travel," it is obvious that the same road may be also used for the "trade" of the west.

There can be no doubt that, *eventually*, the best continuous route, open at all seasons of the year, will be made between the east and the west; but when we reflect that we have not yet even a cheap single track from Albany to Buffalo, that the present state of the money market forbid the idea of the rapid completion of the New York and Erie railroad, and that the prospect of a road on the southern shore of Lake Erie is too distant to have any interest at this time, we must conclude that our true *present* policy is to avail ourselves of those channels which our *present* means will enable us to prepare, which, though not the best possible, are still one step towards that goal; and especially is this course important, as well as judicious, when the comparatively small undertakings we can now execute, are such as will always form a part of the grand ultimate communication which, it is contemplated, will eventually distance all competition, but to the immediate construction of which, our present means may be inadequate, or which the present business of the country may not justify.

Difficult as it might be, at this time, to raise the two or three millions of dollars, to carry on energetically to completion the Great Western railroad, there is a still more important obstacle to be overcome,—for, suppose that railway now in operation, how are the merchants of New York and Boston to avail themselves of its incomparable advantages, when the Utica and Schenectady railroad is expressly prohibited from carrying freight? It is obvious, that if an earlier communication with the west be desirable, it *must* be accomplished by means of railways; but if the State government will not permit us to use these railways, we are, as regards the spring trade, as well off now as we ever can be; for the twenty-five per cent. diminution in cost of transportation, which *may* be effected by the enlargement, is quite insignificant, when compared with the importance of an avenue to the west, opening simultaneously with the Hudson,—the signal for the main spring trade.

It has been proposed to allow the Utica and Schenectady railway to carry freight, paying canal tolls, and bills to that effect have been for the last two sessions reported and lost. The enormous debt which New York is incurring, in order that future generations in *other* States may not suffer the least imaginable or rather imaginary inconvenience from the want of the cheapest communication with the Hudson, has hitherto prevented even this pitiful boon. The capacity of the old canal, with the aid of the railways, is notoriously adequate to any business which can be expected during the next half century; but there is another consideration of great influence, second only to that arising from the immense expenditures on the canal, which must be understood by those whose interests are compromised by, and through whose exertions this stupendous monopoly must be modified,—the people of New York and New England, directly or indirectly, interested in the trade with the west. The opposition alluded to, will be found in the forwarders on the canal, and will be not only powerful, but energetic and concentrated.

The gross amount of tolls received on the Erie canal in 1840, was \$1,536,600, of which sum \$419,430 was from up freight or merchandize, and \$58,459 from passengers, principally emigrants,—the baggage of these poor people being very ingeniously considered as "freight." Now, if an earlier communication with the west be desirable, and all our remarks are based on that assumption, the merchandize would, practically speaking, be all carried by railway, whether intended for this State or the western States, if the requisite permission were granted, and as the "rush of spring business" does not last more than four or six weeks, even now it would generally be over about the time of letting the water into the canal.

The immense benefits which would be conferred on emigrants by placing them in their new homes a month or six weeks earlier in the season, will readily suggest themselves to the intelligent reader.

Again, if the Utica and Schenectady railroad be permitted to carry freight, the immediate effect will be, that large quantities of merchandize for the western States will be carried to Oswego, and there await the opening of the Welland canal, which takes place before the opening of the Erie canal, and generally before the ice leaves the lake at Buffalo. Thus, instead of just entering the Erie canal at Albany, about the 20th of April, the merchandize purchased in New York and Boston, would be about that time entering the har-

bors of Cleveland, Detroit or Chicago. By this route, goods will only pay canal tolls from Albany to Oswego, three dollars seventy-six cents, instead of six dollars fifty-three cents, from Albany to Buffalo, and if the "Ericcson's propellers," or some similar improvement, which it is proposed to apply to sailing vessels on the lakes, should succeed, and the failure of all of them appears scarcely possible—the route by Oswego will be cheaper than that by Buffalo, even with the greatest anticipated reductions in the cost of transportation on the enlarged canal. The present plan is to enlarge the Erie branch of the canal one hundred and ninety-two miles to Buffalo, and to leave the Ontario branch, thirty eight miles to Oswego, in its present dimensions, which, rendering necessary a transhipment at the point of divergence, Syracuse,—will, it is hoped by the friends of the Buffalo route, completely break down all competition in the forwarding business by way of Oswego.

It only requires thirty-five miles of railway from Syracuse to Oswego to enable the merchants of New York and Boston to have their goods afloat on lake Erie, in nine years out of ten, before the opening of the canal at Albany, and generally about as early as by the New York and Erie railroad, were that route in operation, except in very early seasons, as in the year 1828, 1838 and 1842, extreme cases, when the harbor of Buffalo even, was open early enough. The Welland canal opens before the Erie canal even with its present light draught of water, because the opening of the latter is retarded by the frost in its banks in the valley of the Mohawk, but the great advantage of the route by Oswego is found in the fact, that the navigation of Ontario to Port Dalhousie, the *eastern* terminus of the Welland canal, and a little farther *west* than Buffalo, is always open early in April, generally in March; and Port Maitland, the *western* terminus of the Welland canal, lies on the *windward* side of the lake, and is several miles to the *westward* of Dunkirk, so that in late seasons it would offer at least as early a route to the west as the New York and Erie railroad, and at such times, when most needed, its advantages would be peculiarly felt.

It is evident therefore, that nothing short of a repeal or modification of the State monopoly of western transportation, can be of any immediate advantage to the spring trade. But even with the sorry privilege of transporting freight on railways, paying the same tolls to the government as if carried on the canal, and that too, only permitted before the opening of the navigation,—the spring trade

of New York and Boston, by the great lakes, would be about as early as that of Philadelphia, by way of Erie. The mere time of the opening of any avenue to Lake Erie, is not the main consideration; the question is, by which route can we soonest be afloat on that lake? The merchandize from New York and Boston will await the opening of Lake Erie *on* the waters of Ontario, a little to the westward of Buffalo, and will only have forty miles of canal to pass through, to reach, without any transhipment, any port west of Buffalo; and allowing the Welland canal to open generally ten days before the eastern end of the Erie canal, and eight days for the trip from Albany to Buffalo, there can be little risk in anticipating a route earlier than the present one by three weeks, in ordinary seasons, four or five weeks in *late* seasons, as in 1829, 1831, 1835 and 1837, when the navigation opened at Buffalo between the second week and last week in May, and one or two weeks after the opening of the lake at Buffalo in *early* seasons.

The Western railroad of Massachusetts was projected to enable that State to come in for a share of the direct trade with the west, but, if the present government monopoly in this State be kept up, that work must be a failure, as far as the western trade is concerned, however successful it may be in deriving support from other sources. Allow the Utica and Schenectady railway to be used for the transportation of freight, and **NOTHING MORE** is required to give a communication generally as early as has ever been expected from any route in this State, though anything like uniformity in the opening of a route by the eastern end of Lake Erie is impossible, for that event is delayed or brought about by a gale from the west or east, and it is owing to the well known prevalence of westerly winds, that the eastern end of the lake is so often closed from one to two months later than the western end. The year 1841 offers a good illustration,—on the 13th of April, the lake at Buffalo was full of ice, a gale sprung up from the eastward, and on the 14th, the steam-boat General Wayne entered the harbor. Had this gale been from the westward, the lake might have been closed at Buffalo till sometime in May. Again, a gale filled the harbor of Dunkirk with ice, and it remained closed, while the navigation to Buffalo was perfectly free.

The following table from the report of the Canal Commissioners, for 1841, will prove all that has been alledged of this worst feature,—extreme uncertainty of any communication with the western States, by way of Buffalo. The year 1841 has been added to the list:

Year.	Lake open at Buffalo.	Canal open.	Canal open before lake, days.	Lake open before canal, days.
1841,	April 14,	April 24,		10
1840,	" 27,	" 20,	7	20
1839,	" 11,	" 20,	9	10
1838,	March 31,	" 12,	13	13
1837,	May 16,	" 20,	26	10
1836,	April 27,	" 25,	29	10
1835,	May 8,	" 15,	23	15
1834,	April 6,	" 17,	11	11
1833,	" 23,	" 19,	4	15
1832,	" 27,	" 25,	2	15
1831,	May 8,	" 16,	22	14
1830,	" 6,	" 20,	14	14
1829,	" 10,	May 2,	8	10
1828,	April 1,	March 27,	4	10
1827,	" 21,	" 21,	31	56
			129	56
			56	56
Difference in favor of canal,				73 days.

Here we see, that in ten years out of fifteen, the lake was behind the canal, but when the lake opens before the canal, no practical advantage results, for it requires eight days from Albany to Buffalo, and if the lake be not more than eight or ten days behind the canal, there is no real hindrance on that account. Even with the permission to carry freight to Buffalo by railway, it is only in five years out of fifteen that any saving of time would have been secured. It is obvious that there is no possibility of a *uniformly earlier* communication with the west, by way of Buffalo, and the circumstance of the lake having been navigable in March, 1838 and 1842, is no sort of compensation for its having remained closed till the last week in May, 1837.

The writer has never seen any statement of the times of opening of the harbor of Dunkirk. In 1837 the difference must have been three or four weeks in favor of Dunkirk over Buffalo; in 1838 and 1839 the difference was unimportant; in 1840 the time of opening is not known, but he believes it to have been in favor of Dunkirk; and lastly, in 1841 and 1842, Buffalo had the advantage. The route by railway to Buffalo, would be, judging from the experience of the last six years, inferior to that by Dunkirk, two years; superior

to it two years in six; and two years equal to it. The advantages of Dunkirk arise from its being to the westward of Buffalo, and Port Maitland has a similar advantage over Dunkirk, besides the still greater one of being on the windward side of the lake. On the other hand, Dunkirk is the terminus of a railway,—Port Maitland that of a canal; and the liability of the latter to accidents and delay from various causes, would do something toward equalizing the advantages of the two routes. But thirty-five miles of railway, in an easy country, are only required to complete the route via Oswego, and many millions to finish that via Dunkirk; besides which, the permission to use railways for the transportation of freight, will insure the immediate construction of the former. Hence the routes via Oswego and Buffalo by railway, may be rendered almost immediately available for the spring trade, and they together furnish at least as early a communication with the west, as well as a more regular one, than can be afforded by the New York and Erie railway, the only work projected in this State to aid the spring trade via the lakes. As these advantages may be obtained by a mere legislative enactment, granting to the citizens of New York, to a small extent only, a privilege enjoyed to the fullest extent by the people of every other civilized community, and without any outlay on the part of the State, the subject is well entitled to the serious consideration of merchants engaged in the western trade.

The cost of transportation on various routes will now be considered. By the "cost of transportation," is meant the sum paid by the community for the carriage of a given quantity of freight from one place to another, which is very different from the sense in which it is used by the State officers, forwarders, etc., who understand the term to imply the charges of the forwarders exclusive of the tolls to the State, a distinction which has led to very erroneous impressions. The forwarders generally agree on some uniform rates of charges each spring, but as no agreement was made for 1841, and as the business was ruinous, the average rates for the three previous years will be given.

*Time from Buffalo to Albany, nine days.*

<i>By railway to Buffalo.</i>	Per ton.
Albany to Buffalo, 320 miles, at 6 cents per ton per mile,	<u>\$19.20</u>
Canal tolls, 363 miles, at 9 mills per 1,000 lbs. per mile,	<u>6.58</u>
Total cost by railway from Albany to Buffalo,	<u>25.78</u>
Highest charge on canal,	<u>22.00</u>
Difference in favor of canal in cost per ton,	<u>\$3.73</u>
Difference against canal in time,	<u>6 days.</u>
<i>By railway to Oswego.</i>	
Albany to Oswego, 182 miles, at 6 cents per ton per mile,	<u>\$10.92</u>
Canal tolls, 209 miles, at 9 mills per 1,000 lbs.	<u>3.76</u>
Oswego to Port Maitland, at 40 cents per 100 lbs. (highest rates,)	<u>8.00</u>
Total cost from Albany to Port Maitland, a harbor to the westward of Dunkirk,	<u>\$22.68</u>

This differs from the charges on the canal only 68 cents per ton, and, as already explained, the route by Oswego will be earlier and less variable in its time of opening.

The following is taken from a Philadelphia paper :

*"Rates of freight between Philadelphia and Reading,—*

- " Plaster, slate, tiles, gypsum and bricks, \$1.80 per ton of 2,240 lbs. equal to 1 $\frac{1}{2}$  cents per ton per mile of 2,000 lbs.
- " Pig iron, blooms, timber, tar and pitch, \$2.20 per ton of 2,240 lbs. equal to 2 $\frac{1}{10}$  cents per ton per mile of 2,000 lbs.
- " Flour 25 cents per barrel, equal to 2 $\frac{1}{2}$  cents per ton per mile of 2,000 lbs.
- " Dry goods, etc., \$4.40 per ton of 2,240 lbs. equal to 4 $\frac{1}{10}$  cents per ton per mile of 2,000 lbs.
- " No storage will be charged for receiving or delivering freight at any of the depots on the line, unless allowed to remain over ten days."

The average cost of transportation of flour from Albany to Buffalo is 79 $\frac{1}{10}$  cents, (Senate document, 1841, No. 51, p. 12,) or per ton per mile, 2 $\frac{1}{10}$  cents, which is  $\frac{1}{4}$  of a cent per ton per mile less than on the Reading railroad, with only  $\frac{1}{4}$  the speed and during little more than half the year, besides the canal being very nearly

four times as long as the railway, an advantage nearly worth that trifling difference of  $\frac{1}{2}$  of a cent per ton per mile. Taking all things into consideration, the greatest friend of the Erie canal must admit that the Reading railway offers a *cheaper* communication than that canal, notwithstanding the might of the government forces all western freight into its channel; in every other respect, its advantages over the present or enlarged canal are such as to forbid comparison.

From Boston to Albany, by railways belonging to two distinct companies,—a distance of 200 miles,—freight is carried for from \$5.50 to \$10 per ton, or from  $2\frac{1}{2}$  to 5 cents per ton per mile, at 10 miles per hour, over grades of 84 feet per mile. It will be observed, that 6 cents per ton per mile has been allowed on the railways from Albany to Buffalo and Oswego, which is more than twice the rates on the Reading, and 20 per cent. more than the highest rates on the Worcester and Western railroads. It is evident, from the prices, that a road, as well built and managed as these two last, in the vicinity of the Erie canal, would compete successfully with that work. But it must be remembered that the railways of New York are built in the cheapest manner, and that the proprietors look forward to large dividends on the least possible outlay, as the great object of those undertakings, while it is well understood, that the Western railway, in Massachusetts, was projected to advance the general interests of the State, and especially to open a *direct* trade with the west for the manufacturers and merchants; hence, the cost of transportation will be as low as possible,—dividends, beyond five per cent., being of little importance, compared with the indirect benefits expected from that noble work. Nothing is therefore said of the railways of this State taking the *general* trade of the canals, but it appears certain that the facilities they offer will enable them to *command* the “spring trade” and emigrants.

In the same cautious and practical spirit, the writer considers it proper to make the following remarks: A committee of the Massachusetts legislature intimated that a railway was actually better than a navigable river; and the special report of the canal board of New York, 1840, contains the following remark, which may lead the incautious reader to imagine that the cost of transportation on navigable rivers is greater than on a well constructed large canal, though in fact, the price of *towing* is alone alluded to: “The circumstance, too, can hardly fail to excite attention, that while the cost of drawing a loaded barge through that canal, 43 miles, (Delaware and Raritan,) is but \$14, the expense of towing the same

barge by steam upon the navigable waters from New Brunswick to New York, a distance of 40 miles, is \$25. In truth the facilities which are presented by a deep and wide canal for economical traction do not appear to be fully appreciated." The difference in velocity is not given.

With reference to the transportation of freight, it will be sufficient to state that the toll on a barrel of flour from Buffalo to Albany is 33 cents, and that a reduction of tolls in consequence of the enlargement has never been proposed, though it is hinted "that if there be any strong necessity for an increase of revenue, that the business of the canal would not be injured by an addition of 20 per cent. on the present tolls. (Senate doc. No. 51, 1841, p. 12.) The cost of transportation from Albany to New York by steam, has been for years,  $12\frac{1}{2}$  cents per barrel of flour, equal to  $7\frac{1}{16}$  mills per ton per mile, the minimum rates of toll fixed by the constitution being  $8\frac{1}{16}$  mills per ton per mile, which is 13 per cent. more than the *entire* cost of transportation by steam on the Hudson, at the rate of six miles per hour and during nearly nine months in the year. Flour is carried for 25 cents per barrel by steam from Detroit to Buffalo, a distance of 320 miles, and numerous similar and perhaps still stronger instances may be found on the great lakes. The most effectual way to bring the cause of internal improvements into disrepute, is to overrate their advantages, and thus lead the community to expect results which can never be realized.

In speaking of the extreme uncertainty of the route by Buffalo, it is not to be inferred that the opening of the Welland canal is as uniform as can be desired, but merely that the latter route varies less than the former, is *generally* earlier, has always been cheaper, and with the "propellers" or tow-boats, will be quicker and equally regular. The season of 1841 was one of the most backward ever known, yet the ice left the lake at Buffalo much earlier than usual, owing to the prevalence of easterly winds, and could western freight have been carried on railways, merchandize would have reached its destination three weeks earlier than by the canal, and earlier than by the New York and Erie railway or the Welland canal. On the other hand, in 1837, merchandize via New York and Erie railroad or Welland canal, could have been delivered in Cleveland, Detroit, etc., four weeks before the ice left the lake at Buffalo. When the merchants of New York and Boston are *satisfied* that the Great Western railroad is the key to the spring trade and travel of the west, by way of the lakes, its rapid construction is certain; and this knowledge is sure to follow the repeal of the "imperial" mo-

nopoly, and by opening the route by Ontario, will make the public acquainted with the advantages of that lake.

There are, therefore, two great obstacles in the way of any improvement in the spring trade with the west,—the “peculiar institution” of New York prohibiting the citizens from carrying freight on those railways which lead to and from the west,—where the privilege (!) is most required,—and the excessive variations in the opening of the eastern end of Lake Erie. The removal of the former depends on the action of the legislature of this State; the latter must be effected by striking the lake to the westward of Buffalo. For about two years out of three, the route by Oswego and the Welland canal would offer decided advantages over that by railway via Buffalo; in about one year out of three, the latter would have the advantage, so that in *every* year there would be a communication with the west *earlier* than we now have, if the people were allowed to choose the mode of transportation according to their own ideas of their own interest. But by striking the western waters at Detroit, and thus avoiding the ice in Lake Erie altogether, by means of the Great Western railway, merchandize from New York and Boston may be delivered at Detroit early in April, and,—following the ice down the lake,—at Toledo, Sandusky, etc., before the ports of New York are free from ice. The following extract from the “Sketch of Civil Engineering in North America, by David Stevenson, Civil Engineer, London, 1838,” presents a lively view of the insurmountable obstacles to a uniform communication with the west by way of Buffalo; and what is more important than “regularity” in great public thoroughfares?

“In 1837, the year in which I visited America, the navigation (of Lake Erie) was not wholly open till the last week in May. On the 20th of that month, I passed down Lake Erie, on my way to Buffalo, in the steamboat ‘Sandusky,’ on which occasion, even at that late period in summer, we encountered a large field of floating ice extending as far as the eye could reach. Our vessel entered the ice about seven o’clock in the morning, and at twelve in the forenoon, she had got nearly half way through this obstacle, when a breeze of wind sprung up, which, from its direction, had the effect of consolidating the field into a mass so compact, that our vessel being no longer able to penetrate it, was detained a prisoner, at the distance of about ten miles from Buffalo, the port for which she was bound. \* \* \* While the shores of Lake Erie presented this sterile appearance, and were still plunged in the depths of winter, the country in the neighborhood of Quebec, although lying three degrees further north, was richly clothed with vegetation.”

As yet, Lake Erie, or rather its eastern end, is the key to this trade ; the departure of the ice from that water is the sole regulator of the spring trade and travel between the western and northern States, and must continue to be such until the opening of the Great Western railroad, when the cities of New York and Boston will be no longer trammelled in their movements in the spring by the late and worse than all, uncertain opening of Lake Erie, varying nearly two months in two successive years, (1837 and 1838) but will be enabled to avail themselves of the best possible route to the far west.

The above (with the exception of a few lines,) was written last year, and the present spring corroborates the views advanced. The harbor of Buffalo has opened and closed once or twice, and though the journals of that city have alluded to the miles of ice which blocked up the harbor of Dunkirk,—the navigation being open to Buffalo,—it may still turn out that the permanent opening of the lake may not differ much at those places. The harbor of Dunkirk has been newly formed, and six years experience may not be considered sufficient time to show its merits or defects, still the fact that the first boats down the lake, in two successive years, have reached Buffalo before they were able to approach Dunkirk, and the more important circumstance, that a "northwester,"—a phenomenon by no means uncommon on Lake Erie,—*must* fill the harbor, when the ice has broken up and is floating about in that part of the lake, appear to the writer to put an extinguisher on all substantial claim of superiority of Dunkirk over Buffalo, as regards the spring trade by the lakes.

The tax proposed will fortunately do away with all financial difficulties, for this, with the income of the Erie canal under any circumstances, will fully meet the expenses of the government and the interest on the debt, assuming of course that no works will be undertaken in future unless sure to clear expenses and interest at least. A vigorous move on the part of the vast number of persons directly or indirectly interested in the western trade, might procure at the next session of the legislature some modification of this "peculiar institution," though complete emancipation cannot be expected for some time, as in such an event, an enormous debt for enlarging the canal could not be shown to be "necessary," while, under existing circumstances, the boats are occasionally crowded on a few miles of the eastern division, a circumstance paraded on all occasions ; the fact, that the western division is worked to about one-third of its capacity, being as carefully avoided. In short, the

choice lies between an immense public debt, with the latest and slowest, or a smaller temporary debt, with the earliest and quickest communication with the west.

The writer has endeavored to lay before the reader what he considers the great obstacles to any improvement in the spring trade by way of the lakes, and in conclusion remarks, that no amelioration can be expected as long as the government prescribes the channel through which all the western trade must pass, naming also the days of opening and closing, asserting thus, by its acts, that the trading community is not the best judge of its own interests when the *western* trade is under consideration, though in other respects, it—the government—leaves the citizen at liberty to send his merchandize to any *other* part of the world in any way he pleases; also that the earliest possible construction of the best possible route or routes for the trade of the lakes, will be rendered certain if the government will only “let the people alone.”

NEW YORK, March, 1842.

[For the American Railroad Journal and Mechanics' Magazine.]

PRESERVATION OF TIMBER.

MESSRS. EDITORS: I had hoped to add to the following strong attestation of Mr. Archbald, the result of another fungus-pit, containing cordage, canvas and timber, but am informed by the gentleman, under whose direction it was, that, owing to some error or imperfection in the construction of the pit, it has proved unavailing of any effect on the materials subjected to it. I am compelled, therefore, to defer this to a future communication, and must be content, at present, to give the following “extract,” which may add to the confidence and satisfaction of those who have already adopted the process, and remove the scruples of such as may still be doubting.

Extract of a letter from James Archbald, Esq., Chief Engineer to the Delaware and Hudson canal and railroad company, dated Carbondale, March 21, 1842:

“To your inquiries as to the long continued trial I have been making of the rope, prepared, according to your process, with the sulphates of iron and copper, since your reference to it in your circular of March, 1841, I have the gratification to state, that at the request of the president, John Wurts, Esq., of the Delaware and Hudson canal and railroad company, that piece of rope (it was such as is known as two-inch rope) was subjected, about two years ago, to the most powerful influence of heat and moisture I could

produce by means of a hot-bed or fungus-pit. Along side of it was placed another piece of similar rope not so prepared, which, when I opened the pit to ascertain the result, was found entirely rotten. I then replaced it with a *second* sound piece, laying it as before, by the side of yours ; and this, in due time, was found thoroughly decayed ; and in the same way, a *third* piece was completely destroyed. Indeed, so severe was the test, and the preservation of the prepared rope, at the end of the experiment, was so satisfactory, that it induced me to recommend your process to the company, whose mines and railroad are under my charge, and who are in the use of large amounts both of timber and of rope for the inclined planes. I am glad to find they have adopted my advice and contracted with you ; and as soon as you can send me the necessary apparatus, I shall put it in operation, for there is much to be done this season."

The destructible principle, albumen, in cordage, being identical with that of canvas and timber,—the inference from the above is too obvious and important to escape attention or experience neglect ; and the practicability (now perfectly ascertained) of applying the process to the *centre* as well as the ends of the largest and longest piece of timber, and of accomplishing this in a few days ; every desideratum seems supplied that can justify confidence in ; and induce to the employment of, this mode of protecting vegetable matter from decomposition.

EDWARD EARLE, *Patentee.*

PHILADELPHIA, April 5, 1842.

[For the American Railroad Journal and Mechanics' Magazine.]

DELAWARE AND HUDSON CANAL AND COAL COMPANY.

Their report for 1841 comprises the following particulars :

Capital stock,	\$1,922,000
Loans from the State of New York,	800,000
"    "    Individuals,	78,000
	878,000
	<hr/>
	\$2,800,000

The canal is 107 miles long, 30 ton boats, and the railway is 16 miles long, worked by 5 stationary engines.

The following statement shows their coal operations for the season, 1841-'42 :

*March 1, 1842.*

By railroad and canal tolls, -		\$39,400
“ Interest received, -		14,300
“ Profit on purchase of stock to cancel convertible bonds, -		33,000
		86,700
“ Sales of coal in 1841, -	203,000 tons at \$5 50	1,117,000
“ Coal on hand, -	18,300 “ “	104,600
Tons, <u>221,300</u>		<u>\$1,308,300</u>

*March 1, 1841.*

To coal on hand, -	29,000 tons at \$6	\$174,300
--------------------	--------------------	-----------

*March 1, 1842.*

To coal sent to market in 1842,

cost, viz :

Mining, 58				
Transportation on railroad, 58				
Toll or repairs to canal, 58				
Freight, \$1 37	192,300	“	3 60	693,100
Interest on loans, 25				
General expenses, 24				

Balance, profit of the season,

1841-42, -		440,900

Tons, -	<u>221,300</u>	<u>\$1,308,300</u>

In 1839, the profit of the season is stated at \$117,412 and the dividend at 7 p. c. \$134,540

In 1840, “ “ “ “ “ 211,233 “ “ “ 134,540

In 1841, “ “ “ “ “ 440,985 “ “ 10 192,200

9769,630		8461,280

To surplus in cash, March 1, 1842, -		\$203,750
“ coal, “ “ “		104,600

308,350

9769,630

Showing a surplus clear of the dividends for 1841, of \$308,350 which may be set off for bad debts, fall in price, mine rent and sinking fund for repairs, etc., etc. Up to this date, there have been taken in all from their mines 1,200,000 tons, beginning from the year 1829.

The economy in the mining and general operations of this company may be held up to imitation for other regions ; and as it appears that it can deliver coal in market at about \$3 50 per ton, it will be able to accommodate the consumer at about \$4, and still make a fair dividend, if it can maintain its business at 200,000 tons per annum.

The report concludes, by remarking in reference to its future prospects, that,

“ It is thoroughly provided in all respects for an efficient prosecution of its business ; and it will be pursued, during the ensuing season, with vigor and undiminished confidence on the part of the board, in its productive character, to the stockholders.

“ By order of the board.

“ JOHN WURTS, *President.*”

---

#### THE POST OFFICE IN THE OLDEN TIME.

It is somewhat of an unsettled point with historians, as to whom we are indebted for the institution of the letter post. The necessity of such an establishment in every extended government, and the obvious advantages resulting therefrom, must have caused their introduction close on the foot prints of civilization and refinement. The Post Office system as we enjoy it, however, is the result of modern knowledge and improvement ; and has greatly enlarged every beneficial feature which pertain to more ancient plans. Darius, king of Persia, established a line of posts for his private use, having relays of men and horses stationed at proper points along the great roads of his kingdom, so that intelligence could be easily communicated from its extreme boundaries to the capital. The Emperor Augustus of Rome also instituted posts, after very nearly the same manner as the Persian monarch. Various improvements were however adopted by Augustus and the Emperors who succeeded him, which greatly enhanced the value of the post as an agent of government, either for the surveillance of its subject, or for the transmission of its orders.

The earliest notice of such a convenience in modern times, occurs in the thirteenth century, when the students of the University of Paris, established various, though rather uncertain lines of communication with their several families and friends. The English Universities soon followed the example of the French students ; and these seats of learning, hoary with age, and venerable with the gathered wisdom of ages, gave birth to a scheme, which binds together the most distant members of the human family in affectionate communion, and preserves from blight and anguish the hopes and hearts of generations of mankind.

In 1464, Louis XI. of France established by royal ordinance, posts for the use of the court and political purposes only. It is uncertain when posts were introduced into England. That they exis-

ted in the reign of Elizabeth, is evident, from the fact, that, in 1581, there was a chief postmaster there ; and the office of " Post Master for foreign parts," was established by James I. who placed at its head Mathew de l'Equester. Charles I. was the first English monarch, who determined to annex the post office as a department of revenue to the government, and for this purpose established in 1635, under the management of Thomas Witherin, a letter " office for England and Scotland." Intestine troubles, soon ripening into civil war, prevented the advantages which would naturally have grown out of this scheme ; though Cromwell took it up with great spirit, and effected some judicious measures in its management. It had hitherto been an expense to the government. The Commonwealth Parliament confided it to the care of Attorney General Prideaux, who was immediately able to save £7000 per annum. In 1649 he established a weekly post through the principal towns and cities, and so beneficial were its results, that at the time of the restoration, the revenue of the office was farmed out at over £20,000 per annum. In 1700 the income was about £100,000. One century after, it netted the government over £800,000.

It was not until 1619, that any regularly organized method was adopted for the transmission of letters in France, private couriers and governmental agents being the only letter messengers.

In 1616 Count de Taxes established posts in Germany, which proved so useful that the Emperor adopted them as part of the machinery of government, and gave the Count, as a testimony of his favor, the office of postmaster for life.

From these points, the system of posts was gradually extended over Europe. International laws and facilities followed ; though even in England it was a long while before the introduction of those improvements, which the peculiar and confidential nature of such a conveyance required. Most of the present features of the English system were originated and matured since the revolution. In our next we propose to offer an account of the post office in America before the revolution.—*Savannah Georgian.*

---

#### THE POST OFFICE IN AMERICA BEFORE THE REVOLUTION.

The history of this species of colonial intercommunication is remarkably interesting, as showing the gradual increase of the settlements, the growing facilities of travel, and the strengthening of that bond of Union which a common soil and a common fatherland had begun, and which was perfected by the confederation of the Revolution. We find the first notice of a colonial post office in the General Court records in 1639, wherein the house of Richard Fairbanks was appointed as a kind of local post office for the reception of " all letters which are brought from beyond the seas or are to be sent thither," and " he is allowed for every such letter 1d, and must answer all miscarriages through his own neglect in this kind."

In 1677 the merchants of Boston thus petitioned " the General Court now sitting in Boston.

*"May 23, 1677.*

"We whose names are under written, hearing many complaints made by merchants and others, and several of us being sensible of the loss of letters; whereby merchants especially, with their friends and employers in foreign parts are greatly damned; many times the letters imposted and thrown upon the Exchange so that who will may take them up; no person without some satisfaction being willing to trouble their houses therewith; so that letters of great moment are frequently lost:—our humble petition therefore to this Honored Court is, that they will please to depute some meet person to take in and convey letters according to direction; and the Honored Court set the prices on letters and state that affair. And if this Honored Court please, we suppose Lt. Richard Way may be a fit person for that service."

This was signed by William Brattle, John Pynchon, Jr. and fifteen others. It was acceded to, with the exception of appointing Mr. John Hayward "the scrivener" instead of Richard Way.

In 1683, William Penn, the proprietor of Pennsylvania, established posts within the circuit of most of the Pennsylvania and Maryland settlements.

On the 17th February, 1691, Thomas Neale, Esq. was, by letters patent under the seal of England, appointed Postmaster General of the American colonies with "full power and authority to erect, settle and establish within the chief ports of their majesties' colonies and plantations in America, an office or offices for the receiving and dispatching letters and pacquets; and to receive and deliver the same under such rates and sums of money as the planters shall agree to give, and to hold and enjoy the same for the term of twenty-one years."

Under this patent, Col. Andrew Hamilton of New York, acted as Deputy Postmaster General.

In 1692, the assembly of Virginia, under Sir Edmond Andross, confirmed the patent, but the difficulties of travel and the sparseness of the population prevented its provisions from being carried into operation.

The Assembly of New York settled on Col. Hamilton a salary of £50 per annum for three years; the Legislature of Massachusetts, allowed Duncan Campbell, the postmaster of Boston, £25 per annum for two years; and the Court of Hampshire, (New) £20 for three years.

In 1700, the Assembly of Pennsylvania erected a post office at Philadelphia.

It seems, however, by a petition of John Campbell, "master of the post office of Boston and New England," in 1703, that Col. Hamilton, the lessee of the patent of Neale, had lost over £1,400 sterling in settling the Post Office system, was refused reimbursement by Thomas Neale, and thereupon mortgaged the said patent, so that it ultimately devolved on Col. Hamilton, his heirs, etc.

*Savannah Georgian.*

**WESTERN RAILROAD.**—The Erie canal will be opened on the 20th inst. Before that time, the summer rate of through-freight, on the Western railroad, will be fully established. This summer-rate is so calculated as to compete successfully with the ocean communication between Albany and Boston; in other words, it will be cheaper to send goods generally by the Western and Worcester railroad, between Albany and Boston, than to send them by the way of the Atlantic Ocean and North river. Flour, for instance, will, by the large quantity, be taken at 32 cents per barrell, which (taking into view the saving of insurance, wharfage, interests, delay and uncertainty of sea passage, etc.) is cheaper than 28 cents the usual freight by sea between Albany and Boston. Articles of greater value will be charged a higher freight; because there is a greater saving in the insurance and interest. Way-freight will be charged higher in proportion to distance; but, in no case, higher than for a greater distance. In fact, the tariff is calculated to secure the business, with rates profitable for the railroad, on an average.

The inquiry then is: "Will there be any business?"

Let the official account of the actual freight, on the Erie canal, in 1841, answer the inquiry. This official account is derived, from the report of the Canal Commissioners, to the legislature of New York, for 1842, Senate document, No. 33, table A. This table is as follows:

Description, quantity and value of all the property cleared at the collector's office on the New York State canals, in 1841.

Fur and peltry, pounds,	-	-	6,068,000	\$7,463,356
Boards, ashes, timber, staves, etc.,	-	-	642,500	4,377,747
Pork, barrels,	-	-	143,800	1,423,117
Beef, barrels,	-	-	21,153	154,755
Cheese, pounds.	-	-	15,458,000	924,266
Butter and lard, pounds,	-	-	16,660,000	1,982,872
Wool, pounds,	-	-	4,490,000	1,659,511
Flour, barrels,	-	-	1,911,768	10,478,416
Wheat, bushels,	-	-	3,083,700	3,373,451
Rye, corn, barley, bran, etc., tons.	-	-	43,700	835,878
Cotton, tobacco, clover, grass, flaxseed and hops, tons,	-	-	6,012	1,069,447
Leather, furniture, pig iron, etc., tons,	-	-	127,896	5,422,615
Merchandise, pounds,	-	-	282,108,000	50,134,320
Stone, lime, clay, coal, gypsum, etc., tons,	-	-	215,528	2,903,178
Grand total, tons,	-	-	1,521,661	\$92,202,929

Mark ye, gentle reader, the grand total is upwards of ninety-two millions of dollars! equal to the whole amount imported in American vessels, in the whole United States for the year ending 30th September, 1840, as per Treasury tables.

And the above tonnage, 1,521,661 tons, on said canals, is about equal to the number of tons of American shipping entered in the

whole United States from foreign ports, during the year ending 30th September, 1840, which was 1,576,946 tons, as per Secretary of the Treasury's report, House document, No. 122, for 1841, p. 3.

*Boston Transcript.*

**RAILWAY WHEELS.**—Mr. Phipps, of Deptford Green, Engineer, has obtained a patent for improvements in the construction of railway wheels, the object of which is to supersede the process of "shrinking on," which he proposes to do in the following manner:—

A bar of wrought iron is prepared, by rolling in the usual manner, with an outer flange on one edge, and an inner flange in the centre of the bar; this bar is bent into a circular form, and then welded. Sixteen wrought iron spokes are prepared, with an extended end or palm, which may be drawn out by hammering, or welded on; the inner end of each spoke is jagged or perforated, in order that the cast metal may embrace and hold it fast. Eight of these spokes are then laid in a mould, and one portion of the boss or nave of iron cast upon their inner ends; the other eight spokes have the corresponding portion of the boss or nave cast upon them. The two parts of the nave are then brought together, and secured by screw bolts, and the enlarged ends or palms of the spokes strongly secured to the alternate sides of the inner flange by screw bolts, or by riveting. Another method consists in placing all the spokes in their respective positions around the wheel, and casting the boss or nave in one piece, the palms of the spokes being afterwards riveted to the inner flange.

Another patent has been granted to William Losh, Esq., of Little Benton, Northumberland, for improvements of railway wheels, by the application of wood, felt rope, or other such like flexible or yielding material, between the inner tire and the ring or felloe, or bearings produced by the prolongations of the bars of iron employed to make the wrought iron spokes, with or without the intervention of a ring of malleable iron between such bearings and such flexible or yielding material; by which means wrought iron railway wheels will be less liable to be prejudicially acted on by the vibration to which such wheels are liable when in use, than if they were composed of iron alone. The wheels to which these improvements are applicable, are those included in the patentee's former patent, of August, 1830.—*Civil Engineer and Architect's Journal.*

**NARROW ESCAPE OF A RAILROAD TRAIN.**—The Newburyport Herald contains a thrilling story told by Mr. Rogers, the Architect, about the removal of one of the ponderous pillars of the Boston Exchange from Quincy to Boston. The mass weighing 60 tons was drawn by 70 oxen, and on arriving at one of the railroads just before night, the gate being closed and every thing quiet, Mr. Rogers started to push across. When the train was about half way over, the cars appeared in sight, coming at the rate of 20 miles an hour.

It was dark, and no warning to the train could be given. To turn back was impossible, and the only hope was to strain every power to bring the pillar over before the train could come up. On they urged the sluggish beasts, goading them to their utmost strength;

but as they were pushing forward, the chain that held them in one line parted ; it was an awful moment, but there was no time to unite the broken chain, and those still united to the pillar were driven and urged with a desperation that the terrible alternative required. On they went and onward came the cars, the whistle and the bell giving useless warning to beware, while those aboard were wholly unconscious of the fearful danger before them. On urged the stone, its car creaking and groaning with the ponderous weight, and it had barely cleared the rails a few feet, when the train flew by and passed on in the darkness, and the anxious and horror struck men, who had charge of the pillar, wiped the sweat from their brows and breathed as though they had themselves just escaped from a dreadful death.—*New York American.*

## DISTANCES ON THE OHIO AND MISSISSIPPI RIVERS.

From Pittsburgh to

	Miles.		Miles.
Middletown,	11	Fort William,	10 524
Beavertown,	18 29	Madison,	13 537
Fawcetstown,	19 48	Westport,	21 558
Steubenville,	22 70	Jeffersonville,	22 580
Wellsburg,	7 77	Louisville,	1 581
Warrenton,	6 83	New Albany,	5 583
Wheeling,	9 91	Leavenworth,	54 660
Elizabethtown,	13 104	Stephensport,	33 674
Sisterville,	35 139	Rockport,	53 726
Newport,	17 156	Owensburg,	8 734
Marietta,	16 172	Evansville,	35 769
Parkersburg,	12 185	Henderson,	11 780
Bellville,	17 203	Mount Vernon,	22 802
Letart's rapids,	30 232	Carthage,	12 814
Point Pleasant,	29 261	Shawneetown,	16 830
Gallipolis,	3 264	Cave in Rock,	41 871
Guyandott,	34 298	Cumberland river,	41 912
Burlington,	7 305	Tennessee river,	11 923
Portsmouth,	41 346	America,	36 959
Manchester,	36 382	Mouth of Ohio,	11 970
Maysville,	10 392	New Madrid,	65 1035
Ripley,	7 399	Little Prairie,	30 1065
Augusta,	9 408	Memphis,	119 1184
Point Pleasant,	15 423	Arkansas river,	172 1356
Cincinnati,	26 449	Vicksburg,	284 1640
Lawrenceburg,	24 473	Natchez,	103 1743
Aurora,	4 477	St. Francisville,	139 1882
Rising Sun,	7 484	Baton Rouge,	34 1916
Frederickburg,	20 504	New Orleans,	131 2047
Vevay,	10 514		